

PROJECT TITLE : BIOTECHNOLOGY
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STRIPS EXTRACT DENITRATION (1)

Burley strips were extracted with water in a ratio of 1 : 10 strips to water at 80°C in the Rotocell extractor. The final extract was of the following composition : 733 ppm NO_3^- -N, 685 ppm NH_4^+ -N and 4.99% TS.

No problems were encountered in the denitration of the batch part. In accordance with the result found previously (2) all the NH_4^+ -N was eliminated from the tobacco extract before the NO_3^- -N was reduced.

Problems occurred during the continuous denitration at dilution rates higher than 0.1 hr^{-1} . The treated extract contained up to 300 ppm NO_3^- -N and 170 ppm NH_4^+ -N. Most probably this poor result was due to an insufficient aeration of our 1 litre flat blade fermenter.

CONTINUOUS NITRATE MONITORING (3)

The system used for continuous nitrate measurement described earlier (4) was tested with solutions of defined nitrate concentrations. A 10 ppm NO_3^- -N solution used as a standard was filled into the measurement chamber every 6 minutes and the electrode reading recorded. An average deviation of $\pm 0.02 \text{ ppm / hr}$ was found (Fig.1).

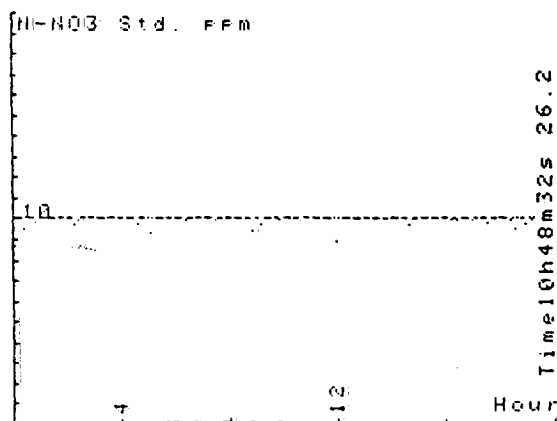


Fig. 1

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Any deviation from the standard value was corrected and the cumulative deviation was recorded on a second graph. For a period of 20 hours the total deviation was measured to be 0.6 ppm (Fig 2). It was found that in general the older the electrode was, the smaller the deviation was.

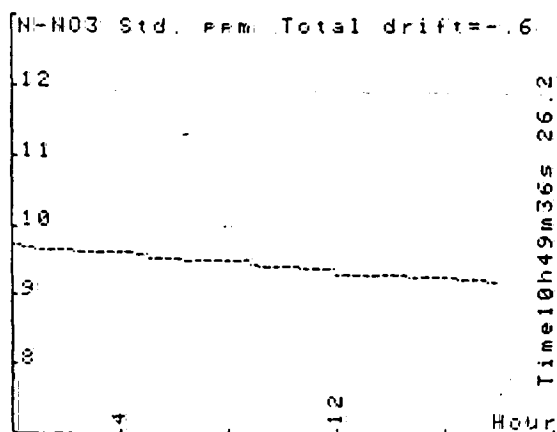


Fig. 2

Fig. 3 presents the nitrate values found in a tobacco extract containing 540 ppm NO_3^- -N. Prior to the measurement the extract was diluted 100 times. The average of the standard deviations was found to be - 2.9 ppm / hour.

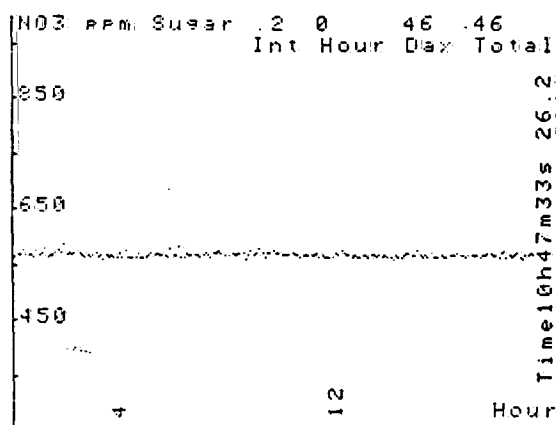


Fig. 3

The installation will be connected to our fermenters next month and the sugar addition regulated depending on the nitrate content of the extract.

REFERENCES

1. J. Berney - Notebook 800802, p. 35 - 37.
2. D. Schulthess - Monthly Report, Biotechnology, November 1980.
3. J. Berney - Notebook 800802, p. 40 - 44.
4. M. Thévoz - Monthly Report, Instrumentation and Process Automation.

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